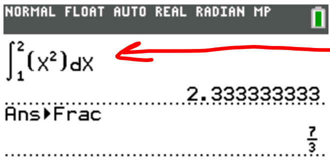
4/30/18 "Life shrinks or expands in proportion to one's courage." -Anais Nin

HW: Test 1 on Wednesday 5/2

AIM: Review for Test 1

Warm Up:

1. $\int_1^2 x^2\,dx = \frac{7}{3}$



Math 9

2. $\int_{-1}^{3} (3x^2 - 2x - 1)\,dx = \boxed{16}$

3. $\int_1^8 \left(\frac{x-2}{\sqrt[3]{x}}\right) dx = \boxed{9.6 \text{ or } \frac{48}{5}}$

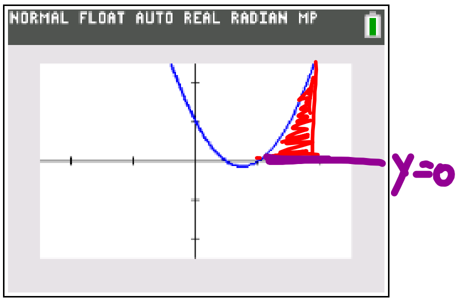
radian mode

4. $\int_0^{\pi} (2 + \sin(x))\,dx = \boxed{8.283}$

5. Find the area between $f(x) = 2x^2 - 3x + 1$ and the x-axis on the interval [1,2].

a, b

y=0



$$\text{Area} = \int_1^2 \left(2x^2 - 3x + 1 - (0) \right) dx$$

$$\text{Area} = \boxed{\frac{7}{6} \text{ units}^2}$$

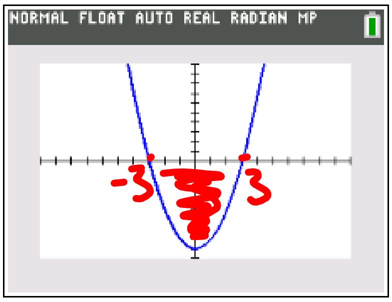
6. Find the area between $f(x) = x^2 - 9$ and the x-axis.

y=0

$x^2 - 9 = 0$

$(x+3)(x-3) = 0$

$x = -3 \quad x = 3$

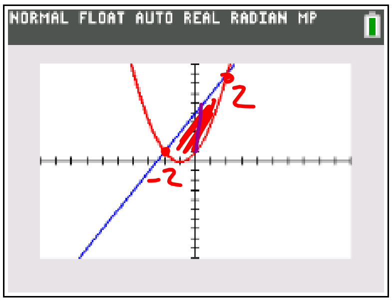


$$\text{Area} = \int_{-3}^{3} \left(0 - (x^2 - 9) \right) dx$$

$$= \boxed{36 \text{ units}^2}$$

$$\text{Area} = \int_a^b \left(\text{Top function} - \text{bottom function}\right) dx$$

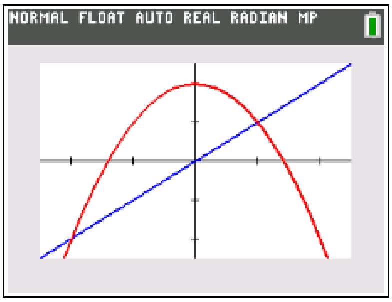
7. Find the area between $y = x^2 + 2x + 1$ *and* $y = 2x + 5$.



$$x^2 + 2x + 1 = 2x + 5$$
$$x^2 - 4 = 0$$
$$x = \pm 2$$

$$\text{Area} = \int_{-2}^{2} \left(2x+5-(x^2+2x+1)\right)dx = \boxed{\frac{32}{3} \text{ units}^2}$$

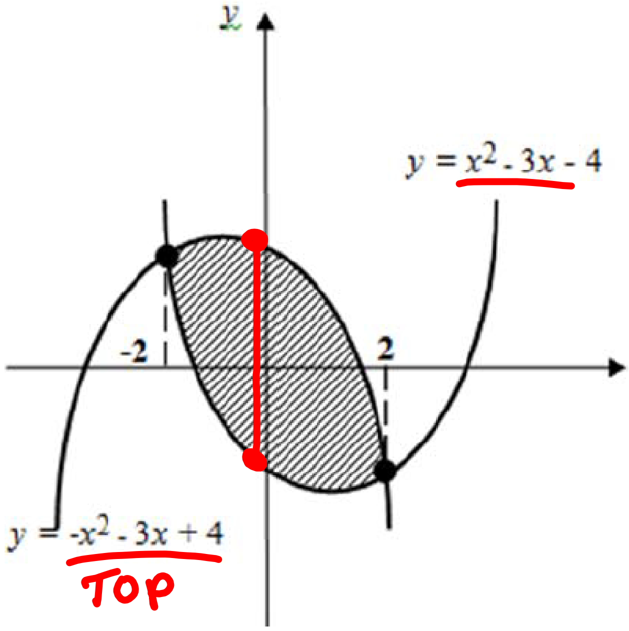
8. Find the area between $f(x) = x$ *and* $g(x) = 2 - x^2$.



$$x = 2 - x^2$$
$$x^2 + x - 2 = 0$$
$$(x-1)(x+2)$$
$$x = 1 \qquad x = -2$$

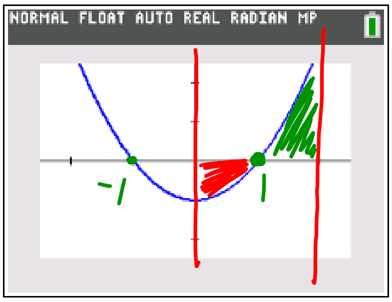
$$\text{Area} = \int_{-2}^{1} \left(2 - x^2 - (x)\right)dx = \boxed{\frac{9}{2} \text{ units}^2}$$

9. Find the area of the shaded region on the accompanying graph:



$$\text{Area} = \int_{-2}^{2} \left(-x^2 - 3x + 4 - (x^2 - 3x - 4)\right) dx = \boxed{\frac{64}{3}\text{ units}^2}$$

10. Find the area between $f(x) = x^2 - 1$ and the x-axis ($y=0$) on the interval [0,2]



$x^2 - 1 = 0$

$x = \pm 1$

$$\text{Area} = \underbrace{\int_0^1 \left(0 - (x^2 - 1)\right)dx}_{\text{Red}} + \underbrace{\int_1^2 \left(x^2 - 1 - (0)\right)dx}_{\text{Green}} = \boxed{2 \text{ units}^2}$$